

## Sequence Listing

10/524530

DT01 Rec'd PCT/PTC 11 FEB 2005

<110> LG Life Sciences, Ltd.

<120> Gene families associated with liver cancer

<130> PC03016-LG

<150> US 60/402,905

<151> 2002-08-14

<150> US 60/403,651

<151> 2002-08-16

<160> 10

<170> KopatentIn 1.71

<210> 1

<211> 578

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (155)..(418)

<223> Gene LBFL302, Clone BC4

<400> 1

cggacgcgtg gggtcgaacg ttccgactga gggttttctg cctgaagaag cgtcatacgg 60

accggattgt ttccgctggc ccagtgtccc cggagcttgt gtgcgataca gagagcacct 120

cggaagctga ggcagctggt acttgacaga gagg atg gcg ctg tcg acc 169

Met Ala Leu Ser Thr

1 5

ata gtc tcc cag agg aag cag ata aag cgg aag gct ccc cgt ggc ttt 217

Ile Val Ser Gln Arg Lys Gln Ile Lys Arg Lys Ala Pro Arg Gly Phe

10 15 20

# Sequence Listing

cta aag cga gtc ttc aag cga aag aag cct caa ctt cgt ctg gag aaa 265  
 Leu Lys Arg Val Phe Lys Arg Lys Lys Pro Gln Leu Arg Leu Glu Lys  
           25                          30                          35

agt ggt gac tta ttg gtc cat ctg aac tgt tta ctg ttt gtt cat cga 313  
 Ser Gly Asp Leu Leu Val His Leu Asn Cys Leu Leu Phe Val His Arg  
           40                          45                          50

tta gca gaa gag tcc agg aca aac gct tgt gcg agt aaa tgt aga gtc 361  
 Leu Ala Glu Glu Ser Arg Thr Asn Ala Cys Ala Ser Lys Cys Arg Val  
           55                          60                          65

att aac aag gag cat gta ctg gcc gca gca aag gta att cta aag aag 409  
 Ile Asn Lys Glu His Val Leu Ala Ala Ala Lys Val Ile Leu Lys Lys  
           70                          75                          80                          85

agc aga ggt ta gaagtcaaag aacatattct tgaaagttat gatgcattct 460  
 Ser Arg Gly

tttggtgtgt aacagatcat aaagacattt ttacacatc agttaatatg ggattattaa 520

atattggcta taaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 578

<210> 2  
 <211> 88  
 <212> PRT  
 <213> Homo sapiens

<400> 2  
 Met Ala Leu Ser Thr Ile Val Ser Gln Arg Lys Gln Ile Lys Arg Lys  
           1                          5                          10                          15

Ala Pro Arg Gly Phe Leu Lys Arg Val Phe Lys Arg Lys Lys Pro Gln  
           20                          25                          30

Leu Arg Leu Glu Lys Ser Gly Asp Leu Leu Val His Leu Asn Cys Leu  
           35                          40                          45

Leu Phe Val His Arg Leu Ala Glu Glu Ser Arg Thr Asn Ala Cys Ala

---

- 3 -

# Sequence Listing

```

aca aac gct tgt gcg agt aaa tgt aga gtc att aac aag gag cat gta      363
Thr Asn Ala Cys Ala Ser Lys Cys Arg Val Ile Asn Lys Glu His Val
60              65              70              75

ctg gcc gca gca aag gta att cta aag aag agc aga ggt      tagaagtc      410
Leu Ala Ala Ala Lys Val Ile Leu Lys Lys Ser Arg Gly
80              85

aaagaacata ttcttgaaag ttatgatgca ttcttttggg tggtaacaga tcataaagac      470

atTTTTTaca catcagttaa tatgggatta ttaaattattg gatataaaaa aaaaaaaaaa      530

a                                                                 531

<210> 4
<211> 88
<212> PRT
<213> Homo sapiens

<400> 4
Met Ala Leu Ser Thr Ile Val Ser Gln Arg Lys Gln Ile Lys Arg Lys
1              5              10              15

Ala Pro Arg Gly Phe Leu Lys Arg Val Phe Lys Leu Lys Lys Pro Gln
20              25              30

Leu Arg Leu Glu Lys Ser Gly Asp Leu Leu Val His Leu Asn Cys Leu
35              40              45

Leu Phe Val His Arg Leu Ala Glu Glu Ser Arg Thr Asn Ala Cys Ala
50              55              60

Ser Lys Cys Arg Val Ile Asn Lys Glu His Val Leu Ala Ala Ala Lys
65              70              75              80

Val Ile Leu Lys Lys Ser Arg Gly
85

```

# Sequence Listing

---

<210> 5  
 <211> 2067  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (32)..(1384)  
 <223> Clone GE6

<400> 5-  
 cccgggctgc caggcgccca gctgtgccca g atg gat ggg aca gag 46  
 Met Asp Gly Thr Glu  
 1 5  
 acc cgg cag cgg agg ctg gac agc tgt ggc aag cca ggg gag ctg ggg 94  
 Thr Arg Gln Arg Arg Leu Asp Ser Cys Gly Lys Pro Gly Glu Leu Gly  
 10 15 20  
 ctt cct cac ccc ctc agc aca gga gga ctc cct gta gcc tca gaa gat 142  
 Leu Pro His Pro Leu Ser Thr Gly Gly Leu Pro Val Ala Ser Glu Asp  
 25 30 35  
 gga gct ctc agg gcc cct gag agc caa agc gtg acc ccc aag cca ctg 190  
 Gly Ala Leu Arg Ala Pro Glu Ser Gln Ser Val Thr Pro Lys Pro Leu  
 40 45 50  
 gag act gag cct agc agg gag acc gcc tgg tcc ata ggc ctt cag gtg 238  
 Glu Thr Glu Pro Ser Arg Glu Thr Ala Trp Ser Ile Gly Leu Gln Val  
 55 60 65  
 acc gtg ccc ttc atg ttt gca ggc ctg gga ctg tcc tgg gcc ggc atg 286  
 Thr Val Pro Phe Met Phe Ala Gly Leu Gly Leu Ser Trp Ala Gly Met  
 70 75 80 85  
 ctt ctg gac tat ttc cag gcc aac act gga caa att gat gac ccc cag 334  
 Leu Leu Asp Tyr Phe Gln Ala Asn Thr Gly Gln Ile Asp Asp Pro Gln  
 90 95 100

# Sequence Listing

---

gag cag cac aga gtc atc agc agc aac ctg gcc ctc atc cag gtg cag	382
Glu Gln His Arg Val Ile Ser Ser Asn Leu Ala Leu Ile Gln Val Gln	
105 110 115	
gcc act gtc gtg ggg ctc ttg gct gct gtg gct gcg ctg ctg ttg ggc	430
Ala Thr Val Val Gly Leu Leu Ala Ala Val Ala Ala Leu Leu Leu Gly	
120 125 130	
gtg gtg tct cga gag gaa gtg gat gtc gcc aag gtg gag ttg ctg tgt	478
Val Val Ser Arg Glu Glu Val Asp Val Ala Lys Val Glu Leu Leu Cys	
135 140 145	
gcc agc agt gtc ctc act gcc ttc ctt gca gcc ttt gcc ctg ggg gtg	526
Ala Ser Ser Val Leu Thr Ala Phe Leu Ala Ala Phe Ala Leu Gly Val	
150 155 160 165	
ctg atg gtc tgt ata gtg att ggt gct cga aag ctc ggg gtc aac cca	574
Leu Met Val Cys Ile Val Ile Gly Ala Arg Lys Leu Gly Val Asn Pro	
170 175 180	
gac aac att gcc acg ccc att gca gcc agc ctg gga gac ctc atc aca	622
Asp Asn Ile Ala Thr Pro Ile Ala Ala Ser Leu Gly Asp Leu Ile Thr	
185 190 195	
ctg tcc att ctg gct ttg gtt agc agc ttc ttc tac aga cac aaa gat	670
Leu Ser Ile Leu Ala Leu Val Ser Ser Phe Phe Tyr Arg His Lys Asp	
200 205 210	
agt cgg tat ctg acg ccg ctg gtc tgc ctc agc ttt gcg gct ctg acc	718
Ser Arg Tyr Leu Thr Pro Leu Val Cys Leu Ser Phe Ala Ala Leu Thr	
215 220 225	
cca gtg tgg gtc ctc att gcc aag cag agc cca ccc atc gtg aag atc	766
Pro Val Trp Val Leu Ile Ala Lys Gln Ser Pro Pro Ile Val Lys Ile	
230 235 240 245	
ctg aag ttt ggc tgg ttc cca atc atc ctg gcc atg gtc atc agc agt	814
Leu Lys Phe Gly Trp Phe Pro Ile Ile Leu Ala Met Val Ile Ser Ser	
250 255 260	

# Sequence Listing

---

ttc gga gga ctc atc ttg agc aaa acc gtt tct aaa cag cag tac aaa	862
Phe Gly Gly Leu Ile Leu Ser Lys Thr Val Ser Lys Gln Gln Tyr Lys	
265 270 275	
ggc atg gcg ata ttt acc ccc gtc ata tgt ggt gtt ggt ggc aat ctg	910
Gly Met Ala Ile Phe Thr Pro Val Ile Cys Gly Val Gly Gly Asn Leu	
280 285 290	
gtg gcc att cag acc agc cga atc tca acc tac ctg cac atg tgg agt	958
Val Ala Ile Gln Thr Ser Arg Ile Ser Thr Tyr Leu His Met Trp Ser	
295 300 305	
gca cct ggc gtc ctg ccc ctc cag atg aag aaa ttc tgg ccc aac ccg	1006
Ala Pro Gly Val Leu Pro Leu Gln Met Lys Lys Phe Trp Pro Asn Pro	
310 315 320 325	
tgt tct act ttc tgc acg tca gaa atc aat tcc atg tca gct cga gtc	1054
Cys Ser Thr Phe Cys Thr Ser Glu Ile Asn Ser Met Ser Ala Arg Val	
330 335 340	
ctg ctc ttg ctg gtg gtc cca ggc cat ctg att ttc ttc tac atc atc	1102
Leu Leu Leu Leu Val Val Pro Gly His Leu Ile Phe Phe Tyr Ile Ile	
345 350 355	
tac ctg gtg gag ggt cag tca gtc ata aac agc cag acc ttt gtg gtg	1150
Tyr Leu Val Glu Gly Gln Ser Val Ile Asn Ser Gln Thr Phe Val Val	
360 365 370	
ctc tac ctg ctg gca ggc ctg atc cag gtg aca atc ctg ctg tac ctg	1198
Leu Tyr Leu Leu Ala Gly Leu Ile Gln Val Thr Ile Leu Leu Tyr Leu	
375 380 385	
gca gaa gtg atg gtt cgg ctg act tgg cac cag gcc ctg gat cct gac	1246
Ala Glu Val Met Val Arg Leu Thr Trp His Gln Ala Leu Asp Pro Asp	
390 395 400 405	
aac cac tgc atc ccc tac ctt aca ggg ctg ggg gac ctg ctc ggt act	1294
Asn His Cys Ile Pro Tyr Leu Thr Gly Leu Gly Asp Leu Leu Gly Thr	
410 415 420	

# Sequence Listing

```

ggc ctc ctg gca ctc tgc ttt ttc act gac tgg cta ctg aag agc aag      1342
Gly Leu Leu Ala Leu Cys Phe Phe Thr Asp Trp Leu Leu Lys Ser Lys
      425              430              435

gca gag ctg ggt ggc atc tca gaa ctg gca tct gga cct ccc      taactg      1390
Ala Glu Leu Gly Gly Ile Ser Glu Leu Ala Ser Gly Pro Pro
      440              445              450

ggccccgctg gtcccatctg ctcatagaa tttcctctca catcagtggg atacagaatt      1450

cagtttctcc cttgccaggt ccttgggatg gttgaccctt gctctgcag tagccttttg      1510

tgagtctgct aaggtagctc tcacacacct cggctctggg gttgatacct gagcctgcaa      1570

tagagccctg aaatcaagag catggcttga gtgtgtgaat atgatgtgtg cacatgctta      1630

atgagcgtgc aagtgtgcac acgtttgtgg agaggagggt gttctggcct gagaaggtaa      1690

agaagaggca tgtccagtat gctttgcagg gtgtgtttgc tcttttccat gcccatgcaa      1750

cccagattgg ggtggagcag gaaggagctc ttttctgttc ccaagcctca gaactcttga      1810

gctgtggcct acttgctgtc ttcaccaggt tcaagctccg tgggccacac tgctgctgtg      1870

ccaagaaggt gtacagcctc cccaggatgg ggcctcatac aacccttcat ctgcactcaa      1930

catttaatcg tgtccttget gtctttttat tttccttttt gtttgtttagc aaaaacctct      1990

atttagattt caataatcag agaagtgtaa aataaaacag attatattgt aaaaaaaaaa      2050

aaaaaaaaaa aaaaaaa      2067

```

&lt;210&gt; 6

&lt;211&gt; 451

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 6



## Sequence Listing

---

```

Met Asp Gly Thr Glu Thr Arg Gln Arg Arg Leu Asp Ser Cys Gly Lys
  1              5              10              15

Pro Gly Glu Leu Gly Leu Pro His Pro Leu Ser Thr Gly Gly Leu Pro
      20              25              30

Val Ala Ser Glu Asp Gly Ala Leu Arg Ala Pro Glu Ser Gln Ser Val
      35              40              45

Thr Pro Lys Pro Leu Glu Thr Glu Pro Ser Arg Glu Thr Ala Trp Ser
      50              55              60

Ile Gly Leu Gln Val Thr Val Pro Phe Met Phe Ala Gly Leu Gly Leu
      65              70              75              80

Ser Trp Ala Gly Met Leu Leu Asp Tyr Phe Gln Ala Asn Thr Gly Gln
      85              90              95

Ile Asp Asp Pro Gln Glu Gln His Arg Val Ile Ser Ser Asn Leu Ala
      100              105              110

Leu Ile Gln Val Gln Ala Thr Val Val Gly Leu Leu Ala Ala Val Ala
      115              120              125

Ala Leu Leu Leu Gly Val Val Ser Arg Glu Glu Val Asp Val Ala Lys
      130              135              140

Val Glu Leu Leu Cys Ala Ser Ser Val Leu Thr Ala Phe Leu Ala Ala
      145              150              155              160

Phe Ala Leu Gly Val Leu Met Val Cys Ile Val Ile Gly Ala Arg Lys
      165              170              175

Leu Gly Val Asn Pro Asp Asn Ile Ala Thr Pro Ile Ala Ala Ser Leu
      180              185              190

Gly Asp Leu Ile Thr Leu Ser Ile Leu Ala Leu Val Ser Ser Phe Phe
      195              200              205

Tyr Arg His Lys Asp Ser Arg Tyr Leu Thr Pro Leu Val Cys Leu Ser

```

# Sequence Listing

---

210	215	220
Phe Ala Ala Leu Thr Pro Val Trp Val Leu Ile Ala Lys Gln Ser Pro		
225	230	235 240
Pro Ile Val Lys Ile Leu Lys Phe Gly Trp Phe Pro Ile Ile Leu Ala		
245	250	255
Met Val Ile Ser Ser Phe Gly Gly Leu Ile Leu Ser Lys Thr Val Ser		
260	265	270
Lys Gln Gln Tyr Lys Gly Met Ala Ile Phe Thr Pro Val Ile Cys Gly		
275	280	285
Val Gly Gly Asn Leu Val Ala Ile Gln Thr Ser Arg Ile Ser Thr Tyr		
290	295	300
Leu His Met Trp Ser Ala Pro Gly Val Leu Pro Leu Gln Met Lys Lys		
305	310	315 320
Phe Trp Pro Asn Pro Cys Ser Thr Phe Cys Thr Ser Glu Ile Asn Ser		
325	330	335
Met Ser Ala Arg Val Leu Leu Leu Leu Val Val Pro Gly His Leu Ile		
340	345	350
Phe Phe Tyr Ile Ile Tyr Leu Val Glu Gly Gln Ser Val Ile Asn Ser		
355	360	365
Gln Thr Phe Val Val Leu Tyr Leu Leu Ala Gly Leu Ile Gln Val Thr		
370	375	380
Ile Leu Leu Tyr Leu Ala Glu Val Met Val Arg Leu Thr Trp His Gln		
385	390	395 400
Ala Leu Asp Pro Asp Asn His Cys Ile Pro Tyr Leu Thr Gly Leu Gly		
405	410	415
Asp Leu Leu Gly Thr Gly Leu Leu Ala Leu Cys Phe Phe Thr Asp Trp		
420	425	430

# Sequence Listing

Leu Leu Lys Ser Lys Ala Glu Leu Gly Gly Ile Ser Glu Leu Ala Ser

435

440

445

Gly Pro Pro

450

<210> 7

<211> 2178

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (41)..(1501)

<223> Clone MB5

<400> 7

gggaggggac ccgggctgcc aggcgccag ctgtgccag atg gat ggg aca gag

55

Met Asp Gly Thr Glu

1

5

acc cgg cag cgg agg ctg gac agc tgt ggc aag cca ggg gag ctg ggg

103

Thr Arg Gln Arg Arg Leu Asp Ser Cys Gly Lys Pro Gly Glu Leu Gly

10

15

20

ctt cct cac ccc ctc agc aca gga gga ctc cct gta gcc tca gaa gat

151

Leu Pro His Pro Leu Ser Thr Gly Gly Leu Pro Val Ala Ser Glu Asp

25

30

35

gga gct ctc agg gcc cct gag agc caa agc gtg acc ccc aag cca ctg

199

Gly Ala Leu Arg Ala Pro Glu Ser Gln Ser Val Thr Pro Lys Pro Leu

40

45

50

gag act gag cct agc agg gag acc gcc tgg tcc ata ggc ctt cag gtg

247

Glu Thr Glu Pro Ser Arg Glu Thr Ala Trp Ser Ile Gly Leu Gln Val

55

60

65

## Sequence Listing

---

<p>acc gtg ccc ttc atg ttt gca ggc ctg gga ctg tcc tgg gcc ggc atg            Thr Val Pro Phe Met Phe Ala Gly Leu Gly Leu Ser Trp Ala Gly Met            70                                75                                80                                85</p>	295
<p>ctt ctg gac tat ttc cag cac tgg cct gtg ttt gtg gag gtg aaa gac            Leu Leu Asp Tyr Phe Gln His Trp Pro Val Phe Val Glu Val Lys Asp                                          90                                95                                100</p>	343
<p>ctt ttg aca ttg gtg ccg ccc ctg gtg ggc ctg aag ggg aac ctg gag            Leu Leu Thr Leu Val Pro Pro Leu Val Gly Leu Lys Gly Asn Leu Glu                                          105                                110                                115</p>	391
<p>atg aca ctg gca tcc aga ctc tcc aca gct gcc aac act gga caa att            Met Thr Leu Ala Ser Arg Leu Ser Thr Ala Ala Asn Thr Gly Gln Ile                                          120                                125                                130</p>	439
<p>gat gac ccc cag gag cag cac aga gtc atc agc agc aac ctg gcc ctc            Asp Asp Pro Gln Glu Gln His Arg Val Ile Ser Ser Asn Leu Ala Leu                                          135                                140                                145</p>	487
<p>atc cag gtg cag gcc act gtc gtg ggg ctc ttg gct gct gtg gct gcg            Ile Gln Val Gln Ala Thr Val Val Gly Leu Leu Ala Ala Val Ala Ala            150                                155                                160                                165</p>	535
<p>ctg ctg ttg ggc gtg gtg tct cga gag gaa gtg gat gtc gcc aag gtg            Leu Leu Leu Gly Val Val Ser Arg Glu Glu Val Asp Val Ala Lys Val                                          170                                175                                180</p>	583
<p>gag ttg ctg tgt gcc agc agt gtc ctc act gcc ttc ctt gca gcc ttt            Glu Leu Leu Cys Ala Ser Ser Val Leu Thr Ala Phe Leu Ala Ala Phe                                          185                                190                                195</p>	631
<p>gcc ctg ggg gtg ctg atg gtc tgt ata gtg att ggt gct cga aag ctc            Ala Leu Gly Val Leu Met Val Cys Ile Val Ile Gly Ala Arg Lys Leu                                          200                                205                                210</p>	679
<p>ggg gtc aac cca gac aac att gcc acg ccc att gca gcc agc ctg gga            Gly Val Asn Pro Asp Asn Ile Ala Thr Pro Ile Ala Ala Ser Leu Gly                                          215                                220                                225</p>	727

tca gct cga gtc ctg ctc ttg ctg gtg gtc cca ggc cat ctg att ttc 1207  
Ser Ala Arg Val Leu Leu Leu Leu Val Val Pro Gly His Leu Ile Phe  
375 380 385

# Sequence Listing

ttc tac atc atc tac ctg gtg gag ggt cag tca gtc ata aac agc cag Phe Tyr Ile Ile Tyr Leu Val Glu Gly Gln Ser Val Ile Asn Ser Gln 390 395 400 405	1255
acc ttt gtg gtg ctc tac ctg ctg gca ggc ctg atc cag gtg aca atc Thr Phe Val Val Leu Tyr Leu Leu Ala Gly Leu Ile Gln Val Thr Ile 410 415 420	1303
ctg ctg tac ctg gca gaa gtg atg gtt cgg ctg act tgg cac cag gcc Leu Leu Tyr Leu Ala Glu Val Met Val Arg Leu Thr Trp His Gln Ala 425 430 435	1351
ctg gat cct gac aac cac tgc atc ccc tac ctt aca ggg ctg ggg gac Leu Asp Pro Asp Asn His Cys Ile Pro Tyr Leu Thr Gly Leu Gly Asp 440 445 450	1399
ctg ctc ggt act ggc ctc ctg gca ctc tgc ttt ttc act gac tgg cta Leu Leu Gly Thr Gly Leu Leu Ala Leu Cys Phe Phe Thr Asp Trp Leu 455 460 465	1447
ctg aag agc aag gca gag ctg ggt ggc atc tca gaa ctg gca tct gga Leu Lys Ser Lys Ala Glu Leu Gly Gly Ile Ser Glu Leu Ala Ser Gly 470 475 480 485	1495
cct ccc taactgggc cccgctgggc ccatttgctc attagaattt cctctcacat Pro Pro	1550
cagtgggata cagaattcag tttctccctt gccaggtcct tgggatgggt gaccctgcc	1610
tctgcagtag ccttttgtga gtctgctaag gtagctctca cacacctcgg ctctgggggt	1670
gatacctgag cctgcaatag agccctgaaa tcaagagcat ggcttgagtg tgtgaatatg	1730
atgtgtgcac atgcttaatg agcgtgcaag tgtgcacacg tttgtggaga ggaggggtgt	1790
ctggcctgag aaggtaaaga agaggcatgt ccagtatgct ttgcagggtg tgtttgctct	1850
tttccatgcc catgcaaccc agattggggt ggagcaggaa ggagctcttt tctgttccca	1910
agcctcagaa ctcttgagct gtggcttact tgctgtcttc accaggttca agctccgtgg	1970

# Sequence Listing

```

gccacactgc tgctgtgcca agaaggtgta cagcctcccc aggatggggc ctcatacaac      2030
ccttcatctg cactcaacat ttaatcgtgt ccttgctgtc tttttatatt cctttttggt      2090
tgtagcaaaa aacctctatt tagatttcaa taatcagaga agtgtaaaat aaaacagatt      2150
atattgtact tgaaaaaaaa aaaaaaaaaa      2178

```

&lt;210&gt; 8

&lt;211&gt; 487

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 8

```

Met Asp Gly Thr Glu Thr Arg Gln Arg Arg Leu Asp Ser Cys Gly Lys
  1              5              10             15

```

```

Pro Gly Glu Leu Gly Leu Pro His Pro Leu Ser Thr Gly Gly Leu Pro
      20              25             30

```

```

Val Ala Ser Glu Asp Gly Ala Leu Arg Ala Pro Glu Ser Gln Ser Val
      35              40             45

```

```

Thr Pro Lys Pro Leu Glu Thr Glu Pro Ser Arg Glu Thr Ala Trp Ser
      50              55             60

```

```

Ile Gly Leu Gln Val Thr Val Pro Phe Met Phe Ala Gly Leu Gly Leu
      65              70             75             80

```

```

Ser Trp Ala Gly Met Leu Leu Asp Tyr Phe Gln His Trp Pro Val Phe
      85              90             95

```

```

Val Glu Val Lys Asp Leu Leu Thr Leu Val Pro Pro Leu Val Gly Leu
      100             105            110

```

```

Lys Gly Asn Leu Glu Met Thr Leu Ala Ser Arg Leu Ser Thr Ala Ala
      115             120            125

```

# Sequence Listing

---

```

Asn Thr Gly Gln Ile Asp Asp Pro Gln Glu Gln His Arg Val Ile Ser
130                      135                      140

Ser Asn Leu Ala Leu Ile Gln Val Gln Ala Thr Val Val Gly Leu Leu
145                      150                      155                      160

Ala Ala Val Ala Ala Leu Leu Leu Gly Val Val Ser Arg Glu Glu Val
165                      170                      175

Asp Val Ala Lys Val Glu Leu Leu Cys Ala Ser Ser Val Leu Thr Ala
180                      185                      190

Phe Leu Ala Ala Phe Ala Leu Gly Val Leu Met Val Cys Ile Val Ile
195                      200                      205

Gly Ala Arg Lys Leu Gly Val Asn Pro Asp Asn Ile Ala Thr Pro Ile
210                      215                      220

Ala Ala Ser Leu Gly Asp Leu Ile Thr Leu Ser Ile Leu Ala Leu Val
225                      230                      235                      240

Ser Ser Phe Phe Tyr Arg His Lys Asp Ser Arg Tyr Leu Thr Pro Leu
245                      250                      255

Val Cys Leu Ser Phe Ala Ala Leu Thr Pro Val Trp Val Leu Ile Ala
260                      265                      270

Lys Gln Ser Pro Pro Ile Val Lys Ile Leu Lys Phe Gly Trp Phe Pro
275                      280                      285

Ile Ile Leu Ala Met Val Ile Ser Ser Phe Gly Gly Leu Ile Leu Ser
290                      295                      300

Lys Thr Val Ser Lys Gln Gln Tyr Lys Gly Met Ala Ile Phe Thr Pro
305                      310                      315                      320

Val Ile Cys Gly Val Gly Gly Asn Leu Val Ala Ile Gln Thr Ser Arg
325                      330                      335

Ile Ser Thr Tyr Leu His Met Trp Ser Ala Pro Gly Val Leu Pro Leu

```



# Sequence Listing

---

340	345	350
Gln Met Lys Lys Phe Trp Pro Asn Pro Cys Ser Thr Phe Cys Thr Ser		
355	360	365
Glu Ile Asn Ser Met Ser Ala Arg Val Leu Leu Leu Leu Val Val Pro		
370	375	380
Gly His Leu Ile Phe Phe Tyr Ile Ile Tyr Leu Val Glu Gly Gln Ser		
385	390	395 400
Val Ile Asn Ser Gln Thr Phe Val Val Leu Tyr Leu Leu Ala Gly Leu		
405	410	415
Ile Gln Val Thr Ile Leu Leu Tyr Leu Ala Glu Val Met Val Arg Leu		
420	425	430
Thr Trp His Gln Ala Leu Asp Pro Asp Asn His Cys Ile Pro Tyr Leu		
435	440	445
Thr Gly Leu Gly Asp Leu Leu Gly Thr Gly Leu Leu Ala Leu Cys Phe		
450	455	460
Phe Thr Asp Trp Leu Leu Lys Ser Lys Ala Glu Leu Gly Gly Ile Ser		
465	470	475 480
Glu Leu Ala Ser Gly Pro Pro		
485		

<210> 9  
 <211> 1616  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (31)..(1551)  
 <223> Clone IE4

# Sequence Listing

<400> 9  
 ccgggctgcc aggcgcccag ctgtgcccag atg gat ggg aca gag acc cgg cag 54  
 Met Asp Gly Thr Glu Thr Arg Gln  
 1 5

cgg agg ctg gac agc tgt ggc aag cca ggg gag ctg ggg ctt cct cac 102  
 Arg Arg Leu Asp Ser Cys Gly Lys Pro Gly Glu Leu Gly Leu Pro His  
 10 15 20

ccc ctc agc aca gga gga ctc cct gta gcc tca gaa gat gga gct ctc 150  
 Pro Leu Ser Thr Gly Gly Leu Pro Val Ala Ser Glu Asp Gly Ala Leu  
 25 30 35 40

agg gcc cct gag agc caa agc gtg acc ccc aag cca ctg gag act gag 198  
 Arg Ala Pro Glu Ser Gln Ser Val Thr Pro Lys Pro Leu Glu Thr Glu  
 45 50 55

cct agc agg gag acc gcc tgg tcc ata ggc ctt cag gtg acc gtg ccc 246  
 Pro Ser Arg Glu Thr Ala Trp Ser Ile Gly Leu Gln Val Thr Val Pro  
 60 65 70

ttc atg ttt gca ggc ctg gga ctg tcc tgg gcc ggc atg ctt ctg gac 294  
 Phe Met Phe Ala Gly Leu Gly Leu Ser Trp Ala Gly Met Leu Leu Asp  
 75 80 85

tat ttc cag cac tgg cct gtg ttt gtg gag gtg aaa gac ctt ttg aca 342  
 Tyr Phe Gln His Trp Pro Val Phe Val Glu Val Lys Asp Leu Leu Thr  
 90 95 100

ttg gtg ccg ccc ctg gtg ggc ctg aag ggg aac ctg gag atg aca ctg 390  
 Leu Val Pro Pro Leu Val Gly Leu Lys Gly Asn Leu Glu Met Thr Leu  
 105 110 115 120

gca tcc aga ctc tcc aca gct gcc aac act gga caa att gat gac ccc 438  
 Ala Ser Arg Leu Ser Thr Ala Ala Asn Thr Gly Gln Ile Asp Asp Pro  
 125 130 135

cag gag cag cac aga gtc atc agc agc aac ctg gcc ctc atc cag gtg 486  
 Gln Glu Gln His Arg Val Ile Ser Ser Asn Leu Ala Leu Ile Gln Val

# Sequence Listing

140	145	150	
cag gcc act gtc gtg ggg ctc ttg gct gct gtg gct gcg ctg ctg ttg			534
Gln Ala Thr Val Val Gly Leu Leu Ala Ala Val Ala Ala Leu Leu Leu			
155	160	165	
ggc gtg gtg tct cga gag gaa gtg gat gtc gcc aag gtg gag ttg ctg			582
Gly Val Val Ser Arg Glu Glu Val Asp Val Ala Lys Val Glu Leu Leu			
170	175	180	
tgt gcc agc agt gtc ctc act gcc ttc ctt gca gcc ttt gcc ctg ggg			630
Cys Ala Ser Ser Val Leu Thr Ala Phe Leu Ala Ala Phe Ala Leu Gly			
185	190	195	200
gtg ctg atg gtc tgt ata gtg att ggt gct cga aag ctc ggg gtc aac			678
Val Leu Met Val Cys Ile Val Ile Gly Ala Arg Lys Leu Gly Val Asn			
205	210	215	
cca gac aac att gcc acg ccc att gca gcc agc ctg gga gac ctc atc			726
Pro Asp Asn Ile Ala Thr Pro Ile Ala Ala Ser Leu Gly Asp Leu Ile			
220	225	230	
aca ctg tcc att ctg gct ttg gtt agc agc ttc ttc tac aga cac aaa			774
Thr Leu Ser Ile Leu Ala Leu Val Ser Ser Phe Phe Tyr Arg His Lys			
235	240	245	
gat agt cgg tat ctg acg ccg ctg gtc tgc ctc agc ttt gcg gct ctg			822
Asp Ser Arg Tyr Leu Thr Pro Leu Val Cys Leu Ser Phe Ala Ala Leu			
250	255	260	
acc cca gtg tgg gtc ctc att gcc aag cag agc cca ccc atc gtg aag			870
Thr Pro Val Trp Val Leu Ile Ala Lys Gln Ser Pro Pro Ile Val Lys			
265	270	275	280
atc ctg aag ttt ggc tgg ttc cca atc atc ctg gcc atg gtc atc agc			918
Ile Leu Lys Phe Gly Trp Phe Pro Ile Ile Leu Ala Met Val Ile Ser			
285	290	295	
agt ttc gga gga ctc atc ttg agc aaa acc gtt tct aaa cag cag tac			966
Ser Phe Gly Gly Leu Ile Leu Ser Lys Thr Val Ser Lys Gln Gln Tyr			

# Sequence Listing

300	305	310	
aaa ggc atg gcg ata ttt acc ccc gtc ata tgt ggt gtt ggt ggc aat			1014
Lys Gly Met Ala Ile Phe Thr Pro Val Ile Cys Gly Val Gly Gly Asn			
315	320	325	
ctg gtg gcc att cag acc agc cga atc tca acc tac ctg cac atg tgg			1062
Leu Val Ala Ile Gln Thr Ser Arg Ile Ser Thr Tyr Leu His Met Trp			
330	335	340	
agt gca cct ggc gtc ctg ccc ctc cag atg aag aaa ttc tgg ccc aac			1110
Ser Ala Pro Gly Val Leu Pro Leu Gln Met Lys Lys Phe Trp Pro Asn			
345	350	355	360
ccg tgt tct act ttc tgc acg tca gaa atc aat tcc atg tca gct cga			1158
Pro Cys Ser Thr Phe Cys Thr Ser Glu Ile Asn Ser Met Ser Ala Arg			
365	370	375	
gtc ctg ctc ttg ctg gtg gtc cca ggc cat ctg att ttc ttc tac atc			1206
Val Leu Leu Leu Leu Val Val Pro Gly His Leu Ile Phe Phe Tyr Ile			
380	385	390	
atc tac ctg gtg gag ggt cag tca gtc ata aac agc cag acc ttt gtg			1254
Ile Tyr Leu Val Glu Gly Gln Ser Val Ile Asn Ser Gln Thr Phe Val			
395	400	405	
gtg ctc tac ctg ctg gca ggc ctg atc cag gtg aca atc ctg ctg tac			1302
Val Leu Tyr Leu Leu Ala Gly Leu Ile Gln Val Thr Ile Leu Leu Tyr			
410	415	420	
ctg gca gaa gtg atg gtt cgg ctg act tgg cac cag gcc ctg gat cct			1350
Leu Ala Glu Val Met Val Arg Leu Thr Trp His Gln Ala Leu Asp Pro			
425	430	435	440
gac aac cac tgc atc ccc tac ctt aca ggg ctg ggg gac ctg ctc ggt			1398
Asp Asn His Cys Ile Pro Tyr Leu Thr Gly Leu Gly Asp Leu Leu Gly			
445	450	455	
tca agc tcc gtg ggc cac act gct gct gtg cca aga agg tgt aca gcc			1446
Ser Ser Ser Val Gly His Thr Ala Ala Val Pro Arg Arg Cys Thr Ala			

# Sequence Listing

460	465	470	
tcc cca gga tgg ggc ctc ata caa ccc ttc atc tgc act caa cat tta			1494
Ser Pro Gly Trp Gly Leu Ile Gln Pro Phe Ile Cys Thr Gln His Leu			
475	480	485	
atc gtg tcc ttg ctg tct ttt tat ttt cct ttt tgt ttg tta gca aaa			1542
Ile Val Ser Leu Leu Ser Phe Tyr Phe Pro Phe Cys Leu Leu Ala Lys			
490	495	500	
acc tct att tagatttca ataatacagag aagtgtaaaa taaaacagat tatattgtaa			1600
Thr Ser Ile			
505			
aaaaaaaaa aaaaaa			1616
<210>	10		
<211>	507		
<212>	PRT		
<213>	Homo sapiens		
<400>	10		
Met Asp Gly Thr Glu Thr Arg Gln Arg Arg Leu Asp Ser Cys Gly Lys			
1	5	10	15
Pro Gly Glu Leu Gly Leu Pro His Pro Leu Ser Thr Gly Gly Leu Pro			
20	25	30	
Val Ala Ser Glu Asp Gly Ala Leu Arg Ala Pro Glu Ser Gln Ser Val			
35	40	45	
Thr Pro Lys Pro Leu Glu Thr Glu Pro Ser Arg Glu Thr Ala Trp Ser			
50	55	60	
Ile Gly Leu Gln Val Thr Val Pro Phe Met Phe Ala Gly Leu Gly Leu			
65	70	75	80
Ser Trp Ala Gly Met Leu Leu Asp Tyr Phe Gln His Trp Pro Val Phe			
85	90	95	

# Sequence Listing

---

Val Glu Val Lys Asp Leu Leu Thr Leu Val Pro Pro Leu Val Gly Leu  
 100 105 110

Lys Gly Asn Leu Glu Met Thr Leu Ala Ser Arg Leu Ser Thr Ala Ala  
 115 120 125

Asn Thr Gly Gln Ile Asp Asp Pro Gln Glu Gln His Arg Val Ile Ser  
 130 135 140

Ser Asn Leu Ala Leu Ile Gln Val Gln Ala Thr Val Val Gly Leu Leu  
 145 150 155 160

Ala Ala Val Ala Ala Leu Leu Leu Gly Val Val Ser Arg Glu Glu Val  
 165 170 175

Asp Val Ala Lys Val Glu Leu Leu Cys Ala Ser Ser Val Leu Thr Ala  
 180 185 190

Phe Leu Ala Ala Phe Ala Leu Gly Val Leu Met Val Cys Ile Val Ile  
 195 200 205

Gly Ala Arg Lys Leu Gly Val Asn Pro Asp Asn Ile Ala Thr Pro Ile  
 210 215 220

Ala Ala Ser Leu Gly Asp Leu Ile Thr Leu Ser Ile Leu Ala Leu Val  
 225 230 235 240

Ser Ser Phe Phe Tyr Arg His Lys Asp Ser Arg Tyr Leu Thr Pro Leu  
 245 250 255

Val Cys Leu Ser Phe Ala Ala Leu Thr Pro Val Trp Val Leu Ile Ala  
 260 265 270

Lys Gln Ser Pro Pro Ile Val Lys Ile Leu Lys Phe Gly Trp Phe Pro  
 275 280 285

Ile Ile Leu Ala Met Val Ile Ser Ser Phe Gly Gly Leu Ile Leu Ser  
 290 295 300

# Sequence Listing

---

Lys Thr Val Ser Lys Gln Gln Tyr Lys Gly Met Ala Ile Phe Thr Pro  
 305 310 315 320

Val Ile Cys Gly Val Gly Gly Asn Leu Val Ala Ile Gln Thr Ser Arg  
 325 330 335

Ile Ser Thr Tyr Leu His Met Trp Ser Ala Pro Gly Val Leu Pro Leu  
 340 345 350

Gln Met Lys Lys Phe Trp Pro Asn Pro Cys Ser Thr Phe Cys Thr Ser  
 355 360 365

Glu Ile Asn Ser Met Ser Ala Arg Val Leu Leu Leu Leu Val Val Pro  
 370 375 380

Gly His Leu Ile Phe Phe Tyr Ile Ile Tyr Leu Val Glu Gly Gln Ser  
 385 390 395 400

Val Ile Asn Ser Gln Thr Phe Val Val Leu Tyr Leu Leu Ala Gly Leu  
 405 410 415

Ile Gln Val Thr Ile Leu Leu Tyr Leu Ala Glu Val Met Val Arg Leu  
 420 425 430

Thr Trp His Gln Ala Leu Asp Pro Asp Asn His Cys Ile Pro Tyr Leu  
 435 440 445

Thr Gly Leu Gly Asp Leu Leu Gly Ser Ser Ser Val Gly His Thr Ala  
 450 455 460

Ala Val Pro Arg Arg Cys Thr Ala Ser Pro Gly Trp Gly Leu Ile Gln  
 465 470 475 480

Pro Phe Ile Cys Thr Gln His Leu Ile Val Ser Leu Leu Ser Phe Tyr  
 485 490 495

Phe Pro Phe Cys Leu Leu Ala Lys Thr Ser Ile  
 500 505